Step 4: Make Assessments of the Individual Elements

Objectives

In **Step 4** you will:

- Categorize your inventory of elements by technology component, and
- Assess your elements for Year 2000 compliance.

Overview

In **Step 4,** you will determine whether each element identified in **Step 3** is Year 2000 compliant, suspect, or not compliant.

You will begin by completing Part 2 of **the Critical Function Breakdown Worksheet** on **page 3-5**. (Part 1 of the worksheet should have already been completed in **Step 3.**) This worksheet represents your inventory of elements and their associated technology components.

Then, using **Assessment Worksheets** on **pages 4-7**, **4-10**, **4-13**, and **4-16**, you will conduct Year 2000 assessments of each technology component of each element of your critical functions.

Finally, **Step 4** also provides you with tips on communicating with manufacturers, vendors, and service suppliers about Year 2000 compliance issues.

As you complete the tasks in **Step Four**, it is important to establish and maintain a schedule for assessing your elements for Year 2000 compliance. You should establish a date by which you want to have 100% of the elements assessed; and regularly track your progress toward completion as you work.

Categorize Your Inventory of Elements

In this task, you will use the inventory of elements you created in Part 1 of the **Critical Function Breakdown Worksheet** in **Step 3** on **page 3-5** and sort them into categories. Each element that is named is actually an element of technology that supports the critical function.

The following information will help you categorize your inventory of elements and create a schedule for completion.

After you've reviewed the information below, fill in the right-hand column (Part 2) of the **Critical Function Breakdown Worksheet** on **page 3-8** by indicating to which category the element belongs.

Categories

Categorize each element as a/n:

1. Computer System,
2. Embedded Microchip,
3. Service, or
4. None.

Why? Because you will use the same basic method of assessment for all the elements within the same category.

The *computer systems* category will later be broken down into *hardware* and *software*.

Each element will either belong to one or more of the categories or be none if it has no parts, which are driven by technology.

For instance, a thermostat may have an embedded chip or it may just be a mechanical, mercury-filled switch. If it is the latter, it does not fall in a category because it cannot be affected by date.

Category Definitions

The following definitions will help you fill in the right-hand column of the worksheet by indicating to which category the element belongs. Remember, it will either belong to one or more of the categories or be none if it has no parts which are driven by technology.

Computer Systems

The **computer systems** category includes:

- Hardware,
- Operating System Software,
- Commercial Off-The-Shelf Software,
- Home-grown or Custom Software,
- Databases,
- Spreadsheets,
- Report or Query Facilities,
- Data Files, and so on.

Hardware

Hardware is more than just your PC, it includes:

- Printers,
- Servers,
- Storage Devices, and
- Any Communications Equipment (used by your computer to link with the outside world).

Operating System Software

Operating System Software includes:

- Operating Systems, as well as
- System Monitoring and Control Software,
- Language Compilers, and
- Database Management Software.

Commercial Off-The-Shelf Software

Commercial Off-The-Shelf Software covers applications like Microsoft Word or Intuit's Quicken that provide discrete functional capabilities.

Home-Grown Software
Custom Software

Home-Grown Software covers software you have produced in-house; **Custom Software** covers applications you have had built to your own specifications.

Databases, Spreadsheets, Report, and Query Facilities

Databases, spreadsheets, report, and query facilities are typically ones you have developed using commercial off-the-shelf packages.

Electronic Information, Stored as Files and Data Sets

Finally, **Electronic Information** is stored as **files and data sets**, which represent both current and historical data of the organization, and probably still need to be accessible after the new year.

Embedded Chips

The **Embedded Microchip** category covers the logic systems (chips) that are embedded within electronic devices used to monitor and/or control the operation of equipment.

Where are embedded chip problems likely to appear? These days, microchips are everywhere!

If there is an *LCD display* (a bright red or green display) that tells you the temperature or the phone number being dialed, then it probably has an embedded chip. If the display shows a calendar date, it is definitely date sensitive and Year 2000 vulnerable. Another thing to look for are devices that respond in different ways to environmental conditions—for example, elevators in high-rise office buildings that are programmed to operate differently on weekends than on weekdays.

While it is not likely that many embedded chips are going to have failures due to Year 2000, you must be thorough in your search for and inspection of all embedded chip elements in your inventory.

Services

The **Service** category covers all support that is provided to your organization by an external business partner. Typically, this includes your suppliers and utility companies, but it will also include functions you have outsourced, such as banking, data entry, or payroll.

Conduct Assessments

How to Assess

Generally, there are two obvious ways to accomplish Year 2000 assessments of the elements of your critical functions:

1. Test it yourself, or
2. Locate a trustworthy expert, and ask them.

Test It Yourselves

You will want to limit the number of elements you test yourself for several reasons:

1. Your resources are limited and the amount of time you have left is short.
2. You could accidentally introduce an error that affects your daily operations.
3. You were not comprehensive enough with your testing and failed to test the single condition that would have revealed a problem.

Locate a Trustworthy Expert

A verbal assurance is not enough to adequately defend yourself against potential litigation, however unlikely that litigation may seem.

You will want Year 2000 compliance documentation for your permanent files. In certain circumstances, a simple statement that the service or software provider is compliant might not be enough. Instead, you might ask for more insight about how they came to that decision. For example, they could describe how they tested the element; or they could provide an auditor's assessment which verifies that they have passed a Year 2000 certification. Whatever compliance evidence is offered should permit you to conclude that sufficient evaluation has taken place and that there will not be a Year 2000 problem with the element.

Using the Worksheets

Both sample worksheets and blank worksheets are included in this workbook. The blank worksheets are designed to record information about the individual elements and to document your progress and findings.

You will use a different worksheet to conduct your research and verify the Year 2000 status of your **hardware**, **software, embedded chips**, and **services.**

Further hints may be obtained by carefully examining each of the sample worksheets to more fully appreciate what kind of information should be recorded.

The two examples from **Table 3-1**: **Sample Critical Function Breakdown List** on **page 3-1**, will guide you to use worksheets later in this step to place each element in a category and complete the sample assessment process. You may use the provided sample elements associated with these two critical functions.

How to Assess Computer System Hardware

When researching *personal computers*, it is the hardware clock and the *basic input/output system* (BIOS) that are the critical determinants for whether your computer hardware is compliant. These must be identified, in addition to the make, model, and serial number of the PC.

Refer to **Table 4-1: Sample Computer System Hardware Assessment Worksheet** on **page 4-6** for ideas of how to complete the assessment worksheet for hardware.

Use the **Computer System Hardware Assessment Worksheet** on **page 4-7** to assess your *computer systems hardware*. Contact the hardware manufacturer to help with your research.

Contact the Hardware Manufacturer

As you conduct your computer system hardware assessments, you can contact your vendors and suppliers for Year 2000 compliance verification through either **letters** or through the **World Wide Web.**

Use the **Sample Vendor/Supplier Year 2000 Inquiry Letter** on **page 4-17** and the **Year 2000 Status Survey Form** on **page 4-18** as a model for tailoring your own letter and survey to be sent to each of your hardware manufacturers and suppliers to ensure that they are providing Year 2000 compliant hardware.

The following Web resources are commonly used to help determine compliance of personal computer hardware. IBM presents a step-by-step method to determine compliance of computer systems

- **IBM:**
  www.ibm.com/IBM/year2000/pcs/preparation.html
- **DELL:**
  www.dell.com/year2000/
- **COMPAQ:**
  www.compaq.com/year2000/
- **MICRON:**
  www.micronpc.com/
- **GATEWAY:**
  www.gw2k.com/

Table 4-1: Sample Computer System Hardware Assessment Worksheet (1 of 2)

Critical Function	Heat and Air Conditioning			
		Year 2000 Compliant?		
Element	Make, Model, and Serial Number	Yes, No	How did you determine?	Notes
None In this category		❑ Yes ❑ No		There is no computer system hardware in HVAC functions at this site.

Table 4-1: Sample Computer System Hardware Assessment Worksheet (2 of 2)

Critical Function	Payroll			
		Year 2000 Compliant?		
Element	Make, Model, and Serial Number	Yes, No	How did you determine?	Notes
Personal Computer	ACME MMM 7S7KZ	❑ Yes ☑ No	ACME Web page said need a Flash Bios Upgrade.	PC Clock on this model OK. Directions to get Flash BIOS upgrade on Web page.
Check Writer Machine	Edson Color 500 ED6235	☑ Yes ❑ No	Just purchased and documentation with printer confirms its compliance.	Edson Web Site also checked and confirmed compliance.

Computer System Hardware Assessment Worksheet

Directions: Use this worksheet to record information about the individual elements of every critical function you determined on the **Critical Functions Breakdown Worksheet** on **page 3-8**. Conduct the research to verify the status of each component. Keep complete notes on the conclusions of your research. Make photo copies as needed.

Critical Function				
Element	Make, Model, and Serial Number	Year 2000 Compliant? Yes No	How did you determine?	Notes
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		

How to Assess Computer System Software

The **operating system software** of your computer relies on the hardware clock to set its date and time when the computer is rebooted. If the hardware clock is not correct, the operating system will use the wrong information, which can affect the way the operating system works, and even the way the hardware and the applications behave. System logs and file administration are the areas most typically vulnerable to this problem.

Another area where many date problems and miscalculations may occur—and be compounded—is in **application software**. If the application uses a two-digit year to do calculations, it can cause problems in sorting records and it can produce erroneous results in such things as calculation of interest rates and loan balances. These types of errors are likely to appear in commercial off-the-shelf software, in home-grown software, in spreadsheets, and in report queries.

Refer to **Table 4-2: Sample Computer System Software Assessment Worksheet** on **page 4-9** for ideas of how to complete the assessment worksheet for software.

Use the **Computer System Software Assessment Worksheet** on **page 4-10** to assess your *computer systems software*. Contact the software company to help with your research.

Contact the Software Company

As you conduct your computer system software assessments, you can contact your software companies for Year 2000 compliance verification through either **letters** or through the **World Wide Web.**

Use the **Sample Vendor/Supplier Year 2000 Inquiry Letter** on **page 4-17** and the **Year 2000 Status Survey Form** on **page 4-18** as a model for tailoring your own letter and survey to be sent to each of your software companies to ensure that they are providing Year 2000 compliant software.

The following Web sites will help you research commercial off-the-shelf software and operating system software:

- **IBM:**
  www.ibm.com/IBM/year2000/pcs/preparation.html
- **Vendor 2000:**
  www.vendor2000.com
- **Federal Year 2000:**
  www.policyworks.gov

Table 4-2: Sample Computer System Software Assessment Worksheet (1 of 2)

Critical Function	Heat and Air Conditioning			
	Developer	Year 2000 Compliant?		
Element	Release/Version Service Packs	Yes, No	How did you determine?	Notes
None In this category		❑ Yes ❑ No		No computer systems associated with HVAC functions at this site.

Table 4-2: Sample Computer System Software Assessment Worksheet (2 of 2)

Critical Function	Payroll			
	Developer	Year 2000 Compliant?		
Element	Release/Version Service Packs	If, Yes, If, No	How did you determine?	Notes
Computer Operating System (Winters 94)	MikeRon Version 6.0 No service Packs Applied.	☑ Yes ❑ No	Check both by phone and MikeRon website. Both listed compliant.	Have asked for letter verification, as of 6/12/1999 have not yet received.
Home-Grown Withholding Reporting Software	Programming Staff N/A None	❑ Yes ☑ No	Reviewed source code and database structure and found 2-digit year data elements throughout. Modifications must be made.	Will either have to replace or have staff modify the code.

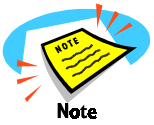
Computer System Software Assessment Worksheet

Directions: Use this worksheet to record information about the individual elements of every critical function you determined on the **Critical Functions Breakdown Worksheet** on **page 3-8**. Conduct the research to verify the status of each component. Keep complete notes on the conclusions of your research. Make photo copies as needed.

Critical Function				
Element	Developer / Vendor, Release / Version Service Packs	Year 2000 Compliant? Yes No	How did you determine?	Notes
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		

How to Assess Embedded Chips

The most important thing to do to determine whether a product with an embedded chip is compliant is to find out who manufactured the product and when it was produced. Then, you can check with that manufacturer or supplier to see whether it is all right as is, has to be replaced, or needs to be updated. Remember, information about older products may be difficult to obtain, especially if the product was manufactured by companies that have gone out of business or merged with other firms.



Suppliers may be reluctant to provide any warranty of Year 2000 compliance unless they have your company's assurance that the system has not been reprogrammed or adapted in any way since it was installed. Be sure to document all responses that you receive.

Refer to **Table 4-3: Sample Embedded Chip Assessment Worksheet** on **page 4-12** for ideas of how to complete the assessment worksheet for embedded chips.

Use the **Embedded Chip Assessment Worksheet** on **page 4-13** to assess your *embedded chips*. Contact each embedded chip manufacturer to help with your research.

Contact the Manufacturer

You can contact your embedded chip manufacturers and suppliers for Year 2000 compliance verification through either **letters** or through the **World Wide Web.**

Use the **Sample Vendor/Supplier Year 2000 Inquiry Letter** on **page 4-17** and the **Vendor Year 2000 Compliance Status Form** on **page 4-18** as a model for tailoring your own letter to be sent to each of your embedded chip manufacturers and suppliers to ensure that they are providing Year 2000 compliant products.

You can also search the Internet to find the provider's website, if one exists. Their site may give additional and important information regarding their products.

Additional Sites:

- **Washington State Year 2000:**
  http://www.ga.wa.gov/y2k/prodcomp/prodbldg.htm
- **GSA Public Building Service:**
  Search the Year 2000 Vendor Product Database
  http://www.yk2.lmi.org/gsa/y2kproducts

Table 4-3: Sample Embedded Chip Assessment Worksheet (1 of 2)

Critical Function	Heat and Air Conditioning			
Element	Manufacturer or Installer Name, Address, Phone, Fax	Year 2000 Compliant? Yes, No	How did you determine?	Notes
Thermostat	Mike's HVAC 12 Main Street 910-555-2777	☑ Yes ❑ No	Mike's HVAC came and inspected. Gave written documentation on 03/05/1999.	Each of 30 units inspected.
Actuators	Mike's HVAC 12 Main Street 910-555-2777	☑ Yes ❑ No	Mike's HVAC came and inspected. Gave written documentation on 03/05/1999.	
Emergency Cut-Off	Mike's HVAC 12 Main Street 910-555-2777	☑ Yes ❑ No	Mike's HVAC came and inspected. Gave written documentation on 03/05/1999.	Not date dependent.
Flow Meter	Mike's HVAC 12 Main Street 910-555-2777	☑ Yes ❑ No	Mike's HVAC came and inspected. Gave written documentation on 03/05/1999.	Not date dependent.
Carbon Dioxide Monitor	Mike's HVAC 12 Main Street 910-555-2777	☑ Yes ❑ No	Mike's HVAC came and inspected. Gave written documentation on 03/05/1999.	Not date dependent.

Table 4-3: Sample Embedded Chip Assessment Worksheet (2 of 2)

Critical Function	Payroll			
Element	Manufacturer or Installer Name, Address, Phone, Fax	Year 2000 Compliant? If, Yes, If, No	How did you determine?	Notes
None In this category		❑ Yes ❑ No		No embedded chips associated with the payroll function at this site.

Embedded Chip Assessment Worksheet

Directions: Use this worksheet to record information about the individual elements of every critical function you determined on the **Critical Functions Breakdown Worksheet** on **page 3-8**. Conduct the research to verify the status of each component. Keep complete notes on the conclusions of your research. Make photo copies as needed.

Critical Function				
Element	Manufacturer or Installer Name Address, Phone, Fax	Year 2000 Compliant? Yes No	How did you determine?	Notes
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		

How to Assess Services

When assessing services, you are determining whether or not the supplier or service provider is taking the proper actions to ensure that their business will not be disrupted by any Year 2000 problems. If their business is disrupted they may not be able to provide the service and supplies you normally receive.

You should contact the service provider and ask if they will provide you with assurance that they are Year 2000 compliant or what they are doing to move toward this goal.

Refer to **Table 4-4: Sample Services Assessment Worksheet** on **page 4-15** for ideas of how to complete the assessment worksheet for services.

Use the **Services Assessment Worksheet** on **page 4-16** to assess your *services*. Contact each service provider to help with your research.

Contact the Service Provider

You can contact your service providers for Year 2000 compliance verification through either **letters** or the **World Wide Web.**

Use the **Sample Vendor/Supplier Year 2000 Inquiry Letter** on **page 4-17** and the **Vendor Year 2000 Compliance Status Form** on **page 4-18** as a model for tailoring your own letter to be sent to each of your service providers to ensure that they are providing Year 2000 compliant services.

You can also search the Internet to find the provider's website, if one exists. Their site may give additional and important information regarding their products.

Additional Sites:

- **Washington State Year 2000:**
  http://www.ga.wa.gov/y2k/prodcomp/prod.htm
- **GSA Public Building Service:**
  Search the Year 2000 Vendor Product Database
  http://www.yk2.lmi.org/gsa/y2kproducts

Table 4-4: Sample Services Assessment Worksheet (1 of 2)

Critical Function	Heat & Air Conditioning			
	Provider	Year 2000 Compliant?		
Element	Name, Address, Phone, Fax	If, Yes, If, No	How did you determine?	Notes
Fuel Source (Natural Gas)	MyTown Gas Company 910-555-1857	❑ Yes ☑ No	Have sent letter request with no answer provided yet.	Phone call to company gave only "We'll be ready" comment; asked for that statement to be faxed to me on company letterhead.
Power Source	YourTown Power Electric Company 123-123-4567	❑ Yes ☑ No	Called and they said they are continuing to work on it and they have a Year 2000 page on their website that will be updated as they finish.	Need to check website monthly. If they aren't finished by Nov. 1999, need to remind residents to prepare for cold weather.

Table 4-4: Sample Services Assessment Worksheet (2 of 2)

Critical Function	Payroll			
	Provider	Year 2000 Compliant?		
Element	Name, Address, Phone, Fax	If, Yes, If, No	How did you determine?	Notes
Payroll Application Program	We Program Company 910-555-1622	❑ Yes ☑ No	Called company, told they are modifying the program and will have Year 2000 compliant version ready for its customers not later than August 30, 1999.	Keep in touch with company to determine status.

Services Assessment Worksheet

Directions: Use this worksheet to record information about the individual elements of every critical function you determined on the **Critical Functions Breakdown Worksheet** on **page 3-8**. Conduct the research to verify the status of each component. Keep complete notes on the conclusions of your research. Make photo copies as needed.

Critical Function				
Element	Service Provider Name Address, Phone, Fax	Year 2000 Compliant? Yes, No	How did you determine?	Notes
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		
		❑ Yes ❑ No		

Sample Vendor/Supplier Year 2000 Inquiry Letter and Vendor Status Survey Form

Directions: Use this sample vendor/supplier letter as a model for tailoring your own letter to be sent to your vendors and suppliers to ensure that they are providing Year 2000 compliant products and services. The **Vendor Status Survey Form** contains useful information you'll want to maintain. Printing the survey form on the back of the letter and including a self-addressed stamped envelope will ensure a higher response rate.

Date:

[Recipient Name]
[Address]
[City, State/Province Zip/Postal Code]

Dear **[Vendor Name]**:

The **[Name of Public Housing Agency (PHA) or Multi-family Owner/Agent (MFOA)]** receives the services or products identified below from your company in support of our mission.

[Name of Product or Service Provided]

With the pending arrival of the year 2000, we need assurance that your delivery of these services or products, and any computer systems or other date reliant devices used to produce, control, or deliver them, are year 2000 compliant. To this end, please provide Certificates, or Letters of Compliance, for the listed equipment or service which your company provides to the **[Name of HA or MFOA]**. Also, please complete the attached form and return to **[name, title, address]** in the included self-addressed stamped envelope by **[Month/Day/Year that is two weeks from date of letter]** If you have any questions about this matter, please contact **[name, phone number]**

Thank you in advance for your prompt attention to this most important matter.

Sincerely,

[Name]

[Title]

Enclosure: Year 2000 Vendor Status Form

Year 2000 Vendor Status Survey Form

Item No:	Question:			
1.	**Will this product or service continue to be available after January 1, 2000?**			❑ **Yes** ❑ **No**
2.	**Does this product or service have any inherent software, including microprocessors**?			❑ **Yes** ❑ **No**
	If so, is the software Year 2000 compliant?	❑ **Yes**		
		❑ **No**	When will it be compliant? **Date:**	
			When will it be released? **Date:**	
			Describe any hardware, operating system, or database upgrades that will be required by this release:	
3	**Is the production, control, or distribution of this product or service dependent upon any automated systems or controls? If so, are these systems Year 2000 compliant? If not, when will they be?**			
4.	**Is the production, control, or distribution of this product dependent upon any third party vendor or supplier? If so, are you ensuring that these vendors/suppliers are Year 2000 compliant?**			
5.	**For Items 2 and 3 above, describe how compliance was achieved and validated? For example, was compliance achieved using date field expansion, a type of windowing (fixed, sliding, dynamic, and static), a combination, or other. Describe the compliance method used and how it was validated.**			
6.	**If the product or service fails to perform as expected on or after January 1, 2000, will the _____(name of HA) be a top priority customer and what guaranteed service response can we expect?**			
7.	**If the product or service fails to perform as expected on or after January 1, 2000, or the production , control, or distribution systems used fail to perform, do you have workaround plans in place to be able to continue providing this service to _____(name of HA)? If so, may we get a copy of your contingency (workaround) plans?**			
8.	**Describe your company's overall Year 2000 project organization, strategy, and efforts to achieve internal Year 2000 compliance.**			
9.	**Please provide the name and contact information for the head of your Year 2000 effort.**			